

Infinium™ EXT iSelect-192 Kit

Customizable ultrahigh-throughput
genotyping array for human and
nonhuman studies



Perform genotyping analysis for 1536 to 27K samples per week, per iScan™ System and associated automation



Streamline lab operations and shrink the environmental footprint with flexible automation and compact reagent packaging



Achieve accurate results using a single- or multispecies custom BeadChip with robust Infinium EXT assay

Introduction

With genomic discoveries accelerating, commercial labs need flexible, high-throughput array technologies that deliver precise single nucleotide polymorphism (SNP) calls to bridge biomarker research and real-world applications. Over the past decade, Infinium genotyping arrays have been used to analyze an estimated 160M samples, demonstrating their popularity and utility.¹

The Infinium EXT iSelect-192 Kit (Figure 1) is designed to provide users with a flexible, exceptionally high-throughput, multispecies genotyping tool for a range of applications. This custom BeadChip maintains the accuracy and robustness of previous Infinium assays while improving operational efficiency for commercial laboratories (Table 1).

Integration with the Illumina Automated Pipetting System and Illumina Lab Automation Software Solution (ILASS) allows laboratories to process hundreds to thousands of samples per week, accommodating fluctuations in sample numbers due to seasonal or project-specific needs. The BeadChip is compatible with the proven iScan System operated by optimized iScan Control Software for rapid, large-scale data acquisition, and is integrated with DRAGEN™ Array and GenomeStudio™ software for robust secondary analysis.

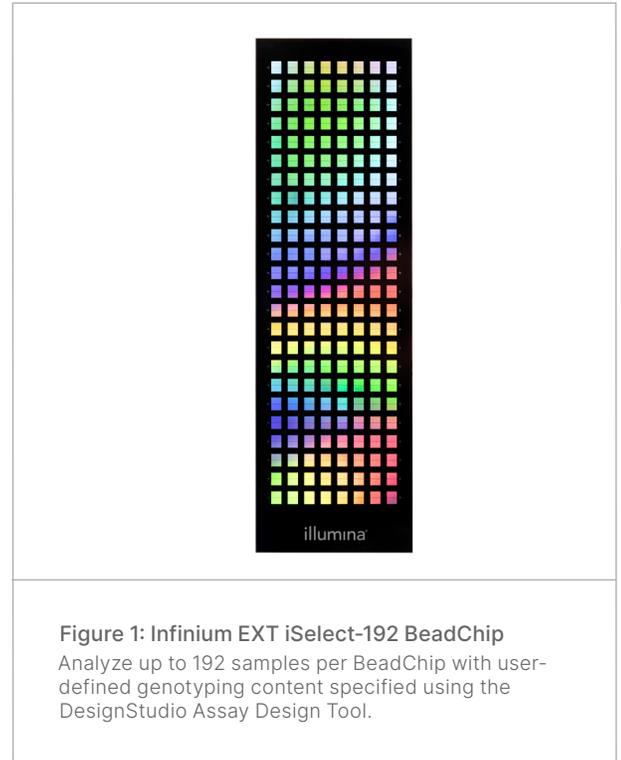


Figure 1: Infinium EXT iSelect-192 BeadChip
Analyze up to 192 samples per BeadChip with user-defined genotyping content specified using the DesignStudio Assay Design Tool.

Table 1: Infinium custom BeadChip specifications comparison

Specification	Infinium XT iSelect-96 BeadChip	Infinium EXT iSelect-192 BeadChip
Instrument	iScan System Infinium Automated Pipetting System with IAC	iScan System Infinium Automated Pipetting System with ILASS
Assay	Infinium XT	Infinium EXT
Samples per BeadChip	96	192
Number of bead types	500 to 100K	100 to 100K
Minimum DNA input	200 ng	100 ng
Multispecies design	Four species	Five species
Annual sample throughput ^a	480K	1.4M
Formamide free	No	Yes
Conversion rate guarantee for < 5K bead types	95%	98% ^b
Conversion rate guarantee for ≥ 5K bead types	95%	95%

a. Throughput is per iScan System running 24 hours, 3 days per week with an AutoLoader 2.x; throughput will vary depending on laboratory resources and automation configurations.
b. Contact your local sales representative for more information.

IAC, Illumina Automation Control; ILASS, Illumina Lab Automation Software Solution.

Robust assay and rapid workflow

The Infinium EXT iSelect-192 BeadChip enables ultra-high-throughput processing in as little as two days, or three days using safe stopping points, from 384-well plates using the innovative low-volume Infinium EXT assay (Figure 2). Optimized reagent volumes ensure DNA processing in low-volume 384 deep-well plates without compromising assay robustness.

The Infinium EXT iSelect-192 BeadChip features a flexible, semiautomated workflow designed to enhance operational efficiency by decreasing per-sample processing time. This streamlined workflow includes whole-genome amplification in just three hours, followed by rapid enzymatic fragmentation, precipitation, and resuspension. Samples are hybridized to the BeadChips overnight, allowing DNA to anneal to locus-specific, 50-base probes covalently linked to Infinium bead types. Enzymatic base extension and fluorescent staining can be performed on the second or third day, depending on lab setup and shift schedules.

Laboratories can use in-house liquid handlers or select Illumina automation solutions that best fit their space and budget to perform plate-based workflow steps (amplification, fragmentation, precipitation, and resuspension). The Illumina Automated Pipetting System with ILASS is essential for transferring samples from deep well plates to the BeadChip and for staining. The Illumina Automated Pipetting System with ILASS uses an updated algorithm to enable precise sample transfer from 384-well plates to the Infinium EXT iSelect-192 BeadChip without the need for tip guides. This supports optimized performance for hybridization, extension, and staining steps for significant improvements in processing time compared to previous Illumina Automated Pipetting System configurations with the Infinium XT iSelect-96 BeadChips (Table 2). The updated iScan Control Software also substantially reduces scanning time, further streamlining the workflow.

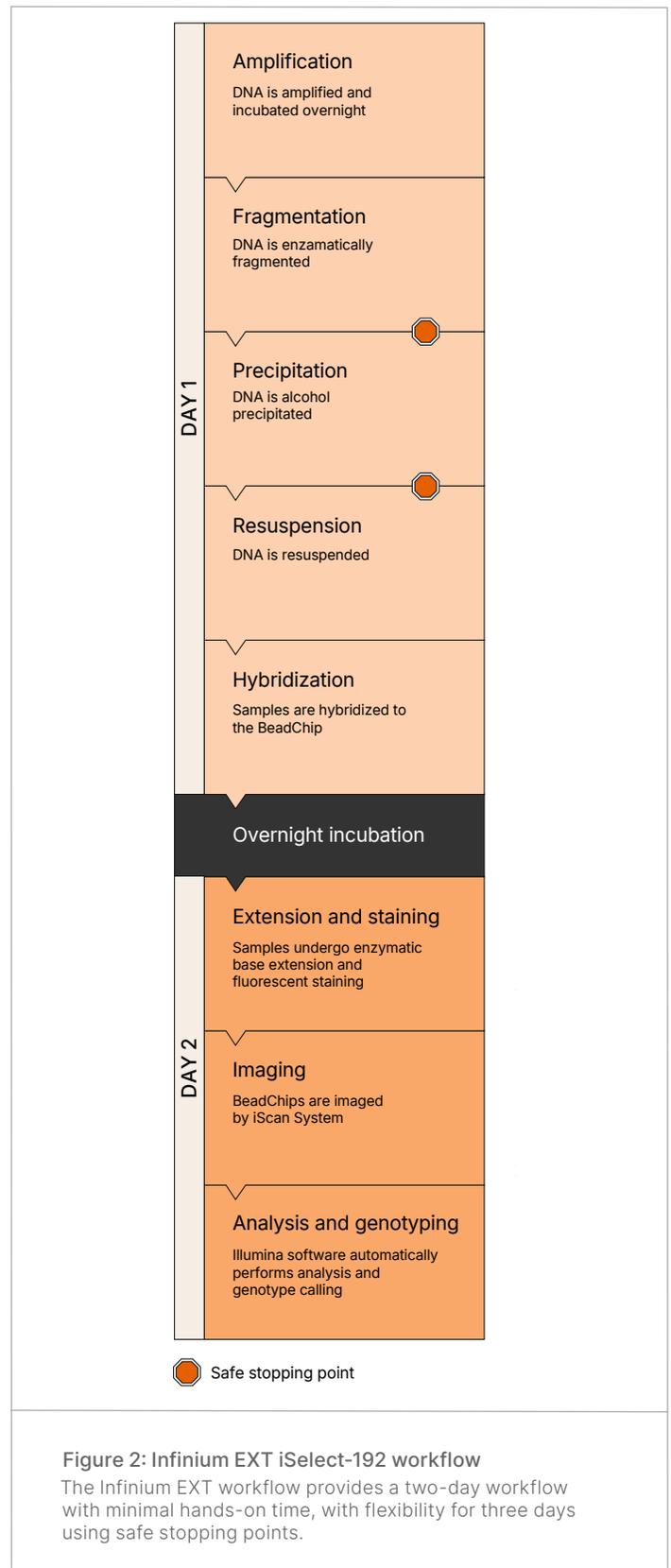


Table 2: Infinium workflow time comparison for 1536 samples

Workflow step	Assessed time	Infinium XT iSelect-96 BeadChip 16 × 96-well plates	Infinium EXT iSelect-192 BeadChip 4 × 384-well plates
Automation and control software		Infinium Automated Pipetting System with IAC	Customer-defined
Amplify DNA	Wait time ^a	Equivalent	Equivalent
Fragment DNA	Wait time	Equivalent	Equivalent
Precipitate DNA	Wait time	Equivalent	Equivalent
Resuspend DNA	Wait time	Equivalent	Equivalent
Automation and control software		Infinium Automated Pipetting System with IAC	Infinium Automated Pipetting System with ILASS
Hybridize to BeadChip	Robot time ^b	240 min	90 min
	Hands-on time ^b	~50 min	~15 min
	Wait time	Equivalent	Equivalent
Wash and stain BeadChip	Robot time	Equivalent	Equivalent
	Hands-on time	Equivalent	Equivalent
	Wait time	~55 min	~30 min
Scanner and control software		iScan with iScan Control Software v3.4 or higher	iScan with iScan Control Software v4.5 or higher
Scan BeadChip	Scanning time	720 min	240 min
	Total DNA-to-data time^c	~50 hr	~38 hr

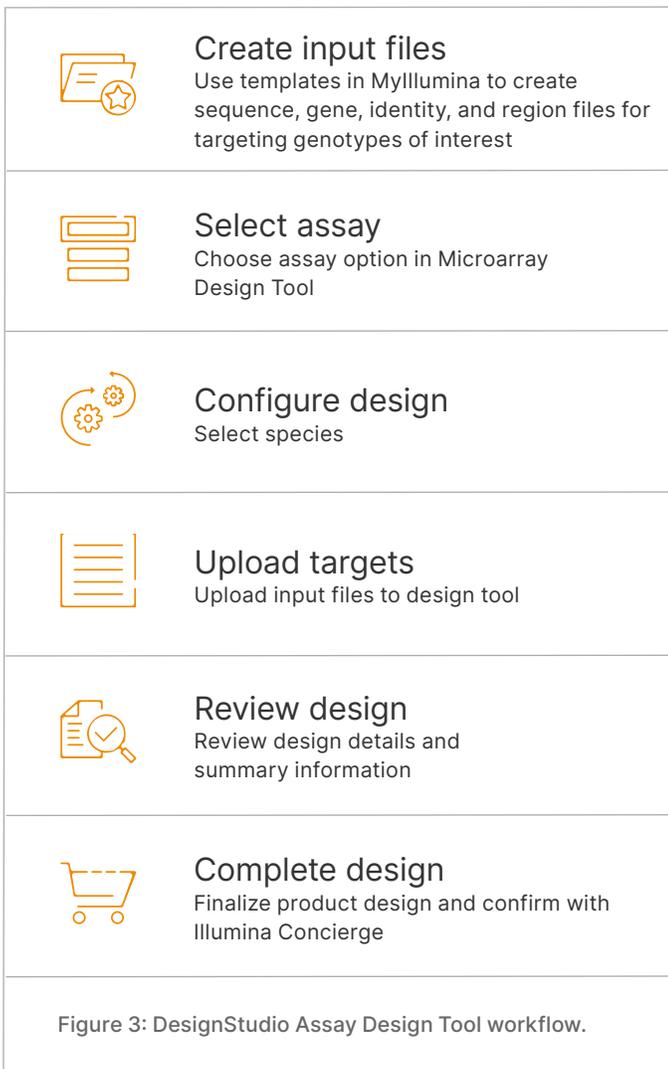
a. Wait time includes incubation, centrifuge, drying, and cool down; total time for centrifuging 1536 samples depends on the number of plates and the centrifuge used.
 b. Robot time and hands-on time for amplification, fragmentation, precipitation, and resuspension depend on liquid-handling solution.
 c. DNA-to-data time for processing 1536 samples depends on customer-defined automation for amplification, fragmentation, precipitation, and resuspension; Illumina Automated Pipetting System for hybridization, extension, and staining; and iScan System and AutoLoader 2.x for scanning.

IAC, Illumina Automation Control; ILASS, Illumina Lab Automation Software Solution.

Flexible, application-specific content

The Infinium EXT iSelect-192 BeadChip Kit fully supports custom, consortia, or commercial product opportunities within agrigenomics or human applications that meet the content and throughput specifications available on the array (ie, ≤ 100K attempted bead types, ≥ 1536 samples per week). In agrigenomics, the Infinium EXT iSelect-192 BeadChip enables genomic selection, parentage testing, trait screening, and more for both diploid and polyploid species. Human applications, including biobanking, population screening, and personalized medicine initiatives, also benefit from this versatile BeadChip format.

Leveraging the DesignStudio™ Assay Design Tool, users can design custom content through a guided, intuitive interface, with a guaranteed conversion rate of at least 95% and a guaranteed turnaround time of 12 to 22 weeks from design to first customer shipment. The DesignStudio Assay Design Tool streamlines the creation of custom panels (Figure 3), while the multispecies feature allows configuration for up to five different species per Infinium EXT iSelect-192 BeadChip, further enhancing operational efficiency and flexibility for commercial labs.



Powerful, accurate data analysis

Secondary analysis

Illumina offers a comprehensive suite of analysis solutions to meet the needs of commercial laboratories using the Infinium EXT iSelect-192 BeadChip. DRAGEN Array secondary analysis software is available in two deployment options to deliver accurate, efficient, and comprehensive secondary analysis of Infinium microarray data. The local command-line package provides granular control for human genomic studies and supports large-scale projects of all diploid species. DRAGEN Array software is also available as a cloud offering via the user-friendly BaseSpace™ Sequence Hub. Both versions offer efficient genotyping performance and high data accuracy. Agrigenomics labs can input reference genomes in FASTA format to call genotypes for diploid species, with results output in VCF format for seamless downstream analysis.

Reporting

GenomeStudio Software provides an integrated platform for analysis of all Illumina array-based genotyping assays. The graphical display of results enables a thorough understanding of large data sets generated by Illumina genotyping assays by providing multimodal examination from a broad, genome-wide view down to a fine-grained single-base view. Customers ordering custom content on Infinium EXT iSelect-192 BeadChip Kits can efficiently analyze genotypes of both diploid and polyploid organisms with automated genotype calling and the ability to create and modify clusters, features essential for agrigenomics applications involving species without available commercial control samples.

Summary

The Infinium EXT iSelect-192 BeadChip is a next-generation solution for ultrahigh-throughput genotyping, offering flexibility and efficiency for commercial laboratories. By supporting up to 192 samples per BeadChip and up to 100K bead types, this solution enables production-scale genotyping across a wide range of species and applications, from agrigenomics to human biobanking and more. The streamlined, semiautomated workflow, integrating Illumina Automated Pipetting System with ILASS and optimized iScan System with iScan Control Software improves

Concierge services

Illumina experts are available to support complex assay design and marker selection for nonhuman species not available in the DesignStudio tool.

Custom clustering services

Illumina experts are available to support custom clustering for nonhuman species with samples provided by customers.

efficiency and turnaround time while maintaining the proven accuracy and robustness of legacy Infinium assays. With customizable content, multispecies capability, and powerful data analysis tools, the Infinium EXT iSelect-192 Kit empowers laboratories to scale operations efficiently and achieve reliable, high-quality results for large-scale genetic studies.

Learn more →

[Infinium EXT iSelect-192 Kit <<link pending>>](#)

[DRAGEN Array](#)

[GenomeStudio Software](#)

Ordering information

Product	Catalog no.
Infinium EXT iSelect-192 Kit (4608 samples)	20139422
Infinium EXT iSelect-192 Kit (23,040 samples)	20139423
iScan System, 110/220 V	SY-101-1001
Infinium Automated Pipetting System with ILASS	20051293
AutoLoader 2.x, single-scanner configuration, 110/220 V	SY-202-1001
AutoLoader 2.x, single-dual configuration, 110/220 V	SY-202-1002
Infinium EX/XT Starter Kit (48 BeadChip batches)	20031916 (110V), 20031993 (220V)
Infinium EX/XT Starter Kit (24 BeadChip batches)	20031915 (110V), 20031992 (220V)
Infinium EX/XT Upgrade Kit (24 BeadChip batches)	20011101
Infinium EX/XT Upgrade Kit (12 BeadChip batches)	20015526

Reference

1. Data on file. Illumina, Inc. October 2, 2025.



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M-GL-03766 v1.0